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## NOTES ON CERTAIN PLANTS IN THE GRAY'S MANUAL RANGE

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Plates 1021-1024

ILIAMNA REMOTA Greene, Leaflets Bot. Crit. 1: 206. 1906.— It is now more than eighteen years since this rare species, therefore known only from an island in the Kankakee River (at Altorf, about nine miles northwest of Kankakee, Illinois), was discovered growing on Peters Mountain in Virginia. Strausbaugh & Core, in an early volume of RHODORA (34: 142. 1932), have presented, under the synonym *Phymosia remota* (Greene) Britton, an interesting account of its discovery at the latter habitat. Their paper was followed closely by another, entitled "*Phymosia remota* in captivity" (S. C. Wadmond, *op. cit.* 207). Both of these papers were so stimulating to lovers of our rarer plant species that it has seemed worth while to supplement them with certain additional notes and remarks.

Rev. E. J. Hill, who collected the first herbarium material June 29, 1872, was at that time a teacher in the Kankakee High School.<sup>1</sup> Apparently he did not realize for some years the importance of his find. It became referred to *Sphaeralcea acerifolia* Nutt. in Asa Gray's Synoptical Flora (1: 317. 1897). On August 1, 1899, Dr. Edward L. Greene revisited the exact locality where Mr. Hill had collected in 1872 and obtained more specimens. He later assigned them to his new genus *Iliamna*, in which he erected for them the new species *I. remota*. His cited

<sup>1</sup> For a good account of his long and fruitful life, see Mrs. Agnes Chase's article, with plate, RHODORA 19: 61-69. 1917.

herbarium specimens were all of his own collecting (none by Hill), so of course the type specimen would be a plant by Greene.<sup>2</sup>

In 1908, Fernald, *RHODORA* 10: 52, renamed Greene's Kankakee plant *Sphaeralcea remota*.

In 1912, Dr. N. L. Britton was concluding his revisional work upon Britton & Brown's *Illustrated Flora* (edit. 2) and wished to secure an ampler assortment of specimens of the Kankakee plant. He wrote to the authorities of Field Museum of Natural History (now the Chicago Natural History Museum) for aid. Dr. Jesse M. Greenman, then of that institution, accordingly undertook to journey to the type locality. The elderly Mr. Hill, then in his seventy-ninth year, and myself were invited to accompany him. Arriving in the forenoon of August 3rd at Altorf, just northeast of the island's upper end, we forded the river at a point somewhat upstream, using a horse-drawn carriage. Securing a boat on the opposite shore, we rowed to the southwestern shore of the island and anchored. We were led presently by Mr. Hill with surprising directness and accuracy to the very spot where he remembered having collected some forty years before. The plants of *Iliamna remota*—to use Greene's original name unmodified—were numerous and both Dr. Greenman and myself secured a few herbarium specimens (*Greenman* 3530, *Sherff* 1600) and ripe seeds for Dr. Britton's studies, also for distribution to various herbaria.<sup>3</sup> It may be added here that Britton published the new combination *Phymosia remota* the following year (Britton & Brown *loc. cit.* 2: 522), and that, since then, several authors, among them Strausbaugh & Core (*loc. cit.*), have accepted Britton's name.

For some years before his death (in 1923), Dr. C. F. Millspaugh, the Curator of Botany in those days at Field Museum of Natural History, was keenly interested in the rare Kankakee plant (*cf.*

<sup>2</sup> Greene's description of the island's position as "some twelve or fifteen miles above the city of Kankakee" was inexact. The island was indeed "just opposite a small village [or what may once have been a village] called Altorf" as added by him, but the distance by road on either side of the Kankakee River measures roughly nine miles from the business center (particularly the courthouse) in Kankakee.

<sup>3</sup> Dr. Isaac Bayley Balfour, Regius Keeper of the Royal Botanic Garden at Edinburgh, was among those sent some of the seeds. He wrote me perhaps three years later that the seeds had been planted on the grounds of his institution and had resulted in large, beautiful, flowering specimens that seemed well established. (Those who attempt to germinate seeds of this species might well scarify them first, between pieces of emory paper, or else soak them for 24 hours before planting, as mentioned in the above cited paper by Wadmond.)



One of the many smaller colonies of *ILIAMNA REMOTA* var. *TYPICA* on Altorf Island (photograph by author, July 28, 1945).

Wadmond, *loc. cit.*). In 1916, on his suggestion, Mr. O. E. Lansing, Jr., of Field Museum, and myself were commissioned to make botanical trips to certain Illinois localities of special interest,<sup>4</sup> among them that on the Kankakee island. At this last locality we collected numerous specimens of *Iliamna remota* (Lansing & Sherff 8, on rocky, grassy slope at Altorf Island, Aug. 23), supplementing these with a liberal quantity of mature seeds. Returning to Kankakee, we were graciously escorted by the late Judge Arthur W. De Selm to his residence and shown a number of fine flowering and fruiting specimens of *I. remota* growing in his garden. These he had raised from seed personally obtained in the type locality several years before.

Shortly afterward, Clute (*Amer. Botanist* 26: 127–129. 1920), writing under the caption, "The rarest American plant," told of finding, after long and what seemed destined to be an unsuccessful search in the type locality, "a single plant of the rare mallow." He removed this plant to his private grounds, where it grew vigorously. Reading further: "We secured an abundance of seeds and hope by another year to have done something toward modifying its rarity." Strausbaugh & Core (*op. cit.* 146) cited Clute's paper and stated that, if his observation was correct, "it must then be apparent that the Virginia station is now the only known place in the world where *Phymosia remota* [*i. e.*, *Iliamna remota* Greene] is growing as a wild plant, and since there are at the present time not more than 50 plants at this station the species must be regarded as an exceedingly rare one that may soon become extinct."

The experience recorded by Clute seemed to my mind somewhat astonishing. In 1912 and again in 1916 I had observed that the more elevated, flat, level stretch of land on the Kankakee island (sometimes called Altorf Island) was cultivated as a corn field. The *Iliamna* plants were found beginning at the edge of the corn field and extending a few meters down the more or less steep and wooded slope leading to the river. They were, we may say, in a narrow belt of open-woods habitat. Since this narrow belt was below where a plough would ever strike, it had seemed logical to assume that even with continued cultivation of the

<sup>4</sup> It is a curious coincidence that one of these trips was described by me in the very issue of *RHODORA* containing Mrs. Chase's biographic sketch of Mr. E. J. Hill (vol. 19, April, 1917; see pp. 74 & 75).

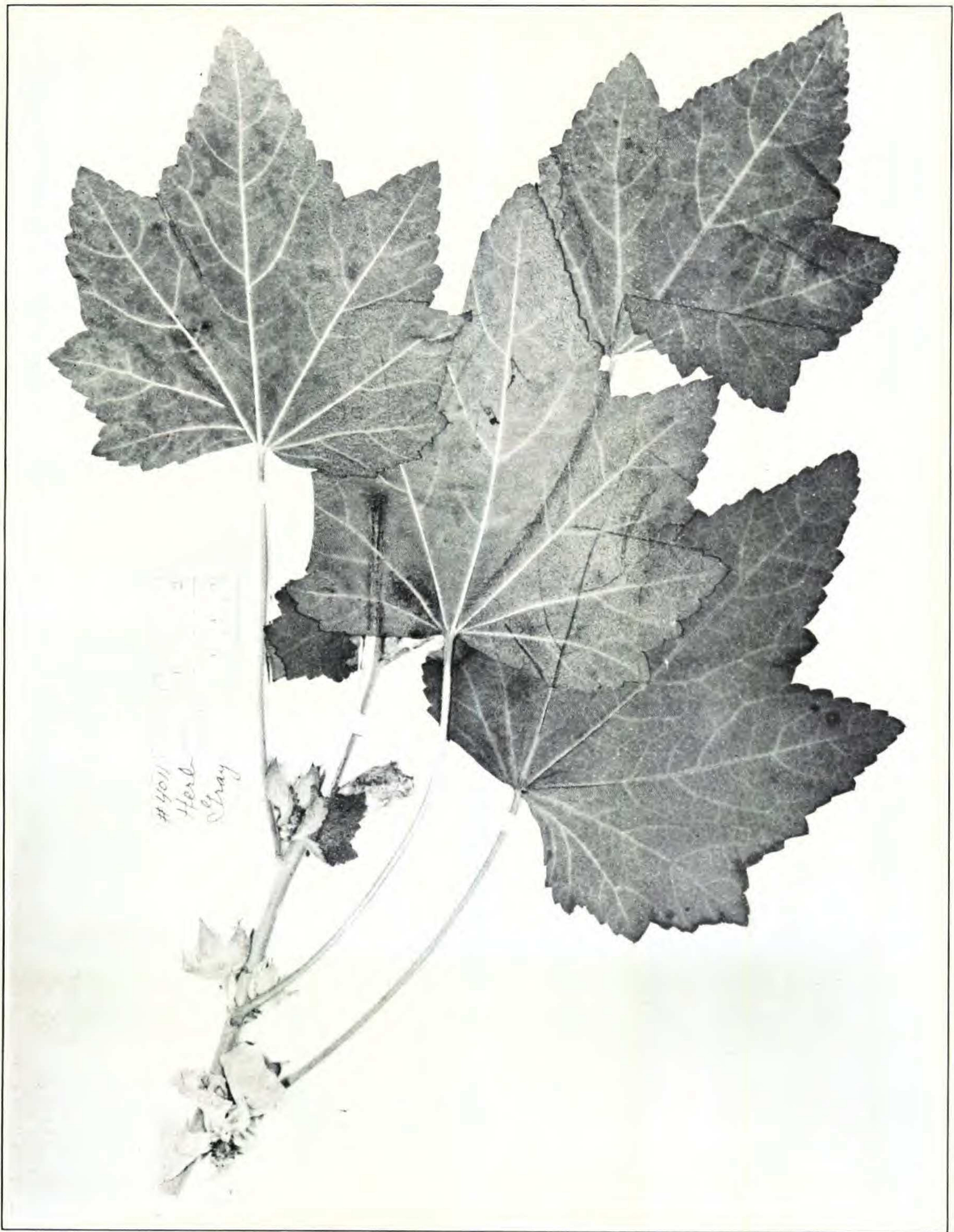
plateau-like field adjacent to this foothold they would be able to persist.

Deciding at last to see for myself how *Iliamna remota* had fared on the Kankakee island, I made a return visit on July 23rd, 1945, to the type locality.<sup>5</sup> To my great delight, I found that farming had been abandoned and that there were several hundreds of *Iliamna* plants flourishing there. From a distance, they displayed in several places a massed effect and, in general habit, somewhat suggested hollyhocks. A good proportion were robust, several-stemmed, 1-1.7 meters tall, and abundantly flowered. The majority were on the open, level expanse of the island, where they may indeed have become re-established subsequent to a one-time cultivation. A fair proportion, however, were on the upper part of the marginal rocky, grassy slope where I had seen them in earlier years.<sup>6</sup> At the time of day the plants were visited (one to two hours before true noon) the temperature was above 90° F. and the sunlight very bright. The flowers were fully expanded, although Wadmond reported (*op. cit.* 209) that on cloudy days the flowers never opened fully. Some five dozen herbarium specimens were obtained (my no. 5021) for distribution to herbaria later on and one small living plant removed for my garden. The specimens were kept for more than four hours slightly moistened in a closed, standard-sized, metal household clothes-boiler, then put in a plant press. Their flowers had remained fully expanded meanwhile.

On the 28th of the same month, I returned to the type habitat, in company with Dr. G. S. Daston of the Chicago Natural History Museum. Photographs of the growing plants were taken (PLATES 1021 and 1022), two more plants were dug up for removal to my garden (where all three plants are now safely established), ripe seeds were obtained, and further observations were made. These may be given briefly: The soil was not gravelly as had been reported, but distinctly a brown, sandy clay.

<sup>5</sup> This time alone. Those who would visit this spot, if not good oarsmen, should have preferably a companion along. The river, while usually only 3 to 15 dm. deep in July and August, is very swift and has many treacherous currents, making progress uncertain and difficult.

<sup>6</sup> It seems likely that Clute and his companions who visited the island in 1920 went to the wrong part of it. The older plants have remarkably long, thick, mostly horizontal roots and on the grassy, unmolested slope there seems little reason why the plants should have appeared successively in 1872, 1912, and 1916, then vanished by 1920, and finally become established again by 1945.



*ILIAMNA REMOTA* var. *TYPICA* from *Sherff* 5021, type locality on Altorf Island, July 23, 1945 (photograph by author from specimen in Gray Herb.).

In open, level situations colonies were up to 5 meters or more across, and essentially a pure stand (pl. 1021), the individual stems not tending to sprawl as they did where plants were growing singly at the edge of the treeless plateau, on grassy slopes in partial shade. Commonly the plants were accompanied by the darkened and dead stems of the previous year (these show clearly in pl. 1022). Leaves nearly always had a broadly triangular terminal lobe, this widening regularly from apex to base and being subtended by wide, obtuse sinuses. A few plants had some leaves, especially on their branches, with terminal lobe oblong or subcuneately narrowed below and subtended with sharp sinuses, as shown in Strausbaugh & Core's plate for a Virginia plant. Some plants had numerous suberect, straightish, axillary branches  $\pm$  2 dm. long, but for most plants these were undeveloped or absent. The flowers had a very pleasing but delicate fragrance (indeed, the dried specimens after a lapse of three months are strikingly fragrant). The larger flowers measured easily 5 cm. in diameter. The petals were irregularly more or less emarginate and usually very inequilateral, with one terminal lobe much exceeding the other.

In 1936, Wiggins published "A Resurrection and Revision of The Genus *Iliamna* Greene" (Contrib. Dudley Herb. Stanford Univ. 1: 211-230, pl. 20). Many data, references, and considerations advanced by him as being germane to a proper understanding of *Iliamna remota* and its congeners must be omitted here. I have been constrained, however, to follow Wiggins in taking up Greene's name *Iliamna remota* for the Kankakee plant, which, for more precise handling, may be known as var. **typica** (var. nov.)<sup>7</sup>. With the Kankakee plant, Wiggins merged the Virginia form, as indeed had been done by Strausbaugh & Core (*vide*

<sup>7</sup> Since preparing the text for this paper, I have learned of the recent remarkable discovery by Dr. S. W. Witmer of Goshen College, of the var. *typica* in Elkhart County, northern Indiana. Professor Witmer has very kindly sent me two specimens for examination and granted permission to announce his discovery. Under date of Nov. 23, 1945, he wrote: "One of these specimens I collected July 4, 1944, the day I discovered this species growing wild at the station to be mentioned below. The other specimen I collected from the same station on Aug. 28, 1945."

"These plants were found 2 miles east of New Paris, Elkhart County, Indiana, at a point where the Wabash R. R. crosses the Elkhart River. I located four colonies of these plants over a stretch of ground extending about 430 yards from the river eastward along the north side of the railroad right-of-way. The four colonies included about 73 more or less distinct clumps. On the latter date of collection many of the plants had grown between 5 and 6 feet tall."

*supra*). However, the Virginia plant was known to be montane in its habitat, while the var. *typica* had been thought of as a prairie plant. Thus, for example, Gleason, writing some years ago on the vegetational history of the middle-western United States (*Annals Assoc. Amer. Geographers* 12: 39–85. 1922) mentioned "*Phymosia remota*" in particular as one of certain plants participating in the eastward advance of our prairies and therefore being "accompanied or followed by some specific evolution." "These plants," he added, "are now confined to the eastern arm of the Prairie Province but in each case have their nearest related species much farther west."

Suspecting that the Virginia plant might be distinct, I visited the Peters Mountain locality at Narrows, Virginia, in August, 1945, but was unable to locate a single specimen. Later, through the very kind aid of Mr. Henry H. L. Smith, Principal of the Narrows High School, the friendly and generous cooperation of Mr. James Hubert Browning, one of his Senior students, was enlisted. Mr. Browning instituted a fresh search upon Peters Mountain and within a week's time succeeded in finding, at an altitude of "900 feet above New River", *i. e.*, at about 2400 feet above sea-level, two plants. Six leaves and an abundance of ripe fruits were sent me for record purposes. The habitat was described as at Narrows.

Meanwhile, through the good offices of my warm personal friend, Dr. P. D. Strausbaugh, of West Virginia University, the further assistance of Dr. Earl L. Core of the same institution and of Dr. E. Meade McNeill of Concord College, Athens, West Virginia, was obtained. Indeed, it happened that Dr. Core, who was the actual discoverer of the Peters Mountain *Iliamna* in 1927, had ascended Peters Mountain as recently as the month before my own fruitless ascent, but during the time at his disposal was unable to find any specimens. That *Iliamna* might still be found, however, was thoroughly believed by Dr. McNeill who, on taking a class up Peters Mountain some nine years earlier, had found a colony of more than a hundred plants. Professor McNeill volunteered to revisit the mountain in an attempt to rediscover specimens. This he did with two companions shortly afterwards. Without much difficulty they finally came upon an area a few rods long, containing numerous individuals and small



clumps or even colonies. Early in October, 1945, spurred on by the enthusiasm and the zealous efforts put forth by Professor McNeill in my behalf, I visited Narrows once again and on Oct. 5th, in his company, ascended Peters Mountain to the newly discovered site. Specimens were obtained for our gardens, also for distribution to herbaria (*McNeill & Sherff* no. 1). Our ascent was made at a point 0.9 mile down (*i. e.*, north and north-west along) the highway (as measured, in the automobile, from the northeast end of the New River bridge at Narrows) along New River. We went up eastwardly and somewhat northwardly. Our plants grew at the very crest of the rocky ridge or shoulder of the mountain, the altitude being about 2500 feet (no specimens were found at 2000 feet, the altitude reported originally by Strausbaugh & Core)<sup>8</sup>. The habitat was of the open-woods type, with numerous shrubs and small or stunted trees such as *Crataegus*, and naturally permitted wind and light an easy access. The soil in the various patches of earth, often mere pockets in the rock, was a very black humus and when wet (as it was at the time of our ascent) appeared identical with the muck often encountered in swamp or marsh habitats of our prairie states. The plants all were in or just past their late fruiting state. In stature, they were much smaller than in var. *typica* of the Kankakee habitat. Their height was mostly 6–9 dm., not mostly 1–1.7 m. as in var. *typica*<sup>9</sup>. The leaves had blades seldom 1 dm. (and very rarely 1.25 dm.) broad or long, while in var. *typica* leaf-blades 1.5 dm. or more in length and breadth are common. Some specimens could be found with terminal leaf-lobe as described above for most leaves of var. *typica*, but the majority of leaves were as shown in Strausbaugh & Core's illustration (*loc. cit.*, fig. 1) and had the terminal lobe oblong or subcuneately narrowed below and subtended with sharp sinuses (see pl. 1024).<sup>10</sup>

<sup>8</sup> On my abortive trip in August I made extensive searches at levels of from 1900 to 2300 feet. Numerous outcropping rocks were observed, as described by Strausbaugh and Core for the habitat, but seemingly the habitat had been altered since their time because of heavy forest-cutting and subsequent reforestation. This change was remarked upon likewise by Core when he ascended in July.

<sup>9</sup> Strausbaugh and Core in their "description of the Virginia plant" gave the height as "0.6–2 m. tall, or taller," but neither Dr. McNeill nor I could find any plants appreciably over a meter tall.

<sup>10</sup> The terminal lobe is especially apt to be widened at or slightly below the middle, much as in some material of *Iliamna latibracteata* Wiggins of the western United States.

A subsequent examination of additional herbarium specimens from Peters Mountain, collected there by Fogg and by Sharp (and very kindly lent me by Dr. J. M. Greenman, Curator of the Herbarium of the Missouri Botanical Garden), has been made but no constant differences have been found in flowers or fruits. It appears that the Peters Mountain plants (*vide* pl. 1024) are specifically identical with the Kankakee plants (*vide* pl. 1023) but varietally distinct. I have named them after Dr. Earl L. Core who, as a member of the West Virginia University Botanical Expedition in 1927, discovered the first specimens:

*ILIAMNA REMOTA* var. **Corei**, var. nov.—A varietate *typica* plantis humilioribus plerumque sub 1 m. altis foliis minoribus plerumque sub 1 dm. latis et lamina sub 1 dm. longis lobo terminali saepius oblongo vel infra subcuneate angustato et sinibus plus minusve acribus subtento differt.

**SPECIMENS EXAMINED:** *James Hubert Browning*, at 900 feet above New River, end of Peters Mt., in Narrows, Virginia, September, 1945 (two plants found; leaves and fruits in Chi. Nat. Hist. Mus.); *John M. Fogg, Jr.*, 15047, alt. 3000 feet, on dry, wooded, rocky shoulder of Peters Mt., along New River north of Narrows, Jul. 17, 1938 (Mo. Bot. Gard.); *McNeill & Sherff* 1, in black humus or muck, among rocks at top of ridge, alt. about 2500 feet, Peters Mt., Narrows, Oct. 5, 1945 (TYPE, Gray Herb.: ISOTYPES, Carnegie Mus., 2 sheets; Chi. Nat. Hist. Mus.; Cornell Univ.; Delessert Herb.; Gray Herb.; Kew Bot. Gard.; McNeill Herb. in Concord Coll.; Univ. Minnesota; Mo. Bot. Gard.; N. Y. Bot. Gard., 2 sheets; Mus. Nat. Hist. Paris; Phila. Acad. Nat. Sci., 2 sheets; Stanford Univ., 2 sheets; U. S. Nat. Mus., 2 sheets; West Virginia Univ.); *Aaron J. Sharp*, on rocky exposure of Peters Mt., Narrows of New River, June 29, 1940 (Mo. Bot. Gard., 2 sheets); *West Virginia University Bot. Exped.*, Peters Mt., The Narrows (Carn. Mus.; N. Y. Bot. Gard., where dated Jul. 20, 1929).

*VALERIANELLA CHENOPODIFOLIA* (Pursh) DC.—Deam (Fl. Indiana 890. 1940) cites definitely or positively a single locality in Indiana for this species, namely Studebaker's woods, St. Joseph County, where it was collected by Nieuwland in 1912 and again in 1919. For the past five years I have noted specimens growing at certain spots in bottom-land or flood-plain woods along Trail Creek, just south of U. S. Highway 20 and perhaps two miles southeast of Michigan City. One stand, covering a quarter of an acre or more near the bridge at a small cross-road,